Extended Wavelength InP Based Avalanche Diodes for MWIR Response, Phase I

Completed Technology Project (2011 - 2012)

Project Introduction

For this NASA STTR program, we propose to develop a novel superlattice-based near infrared to midwave infrared avalanche photodetector (APD) grown on InP substrates for single photon counting applications at high operating temperatures on the order of 200K accessible using thermoelectric coolers. This enables a detector with broad spectral response spanning 0.9 to 4 μm wavelength with reduced cooling requirements, offering a reliable detector technology with small size weight and power requirements that is ideal for future planetary missions. The detector is based on Princeton Lightwave's industry-leading planar-geometry single photon counting APD detector platform designed for 1.55 μm wavelengths, with incorporation of a novel absorber region.

Primary U.S. Work Locations and Key Partners

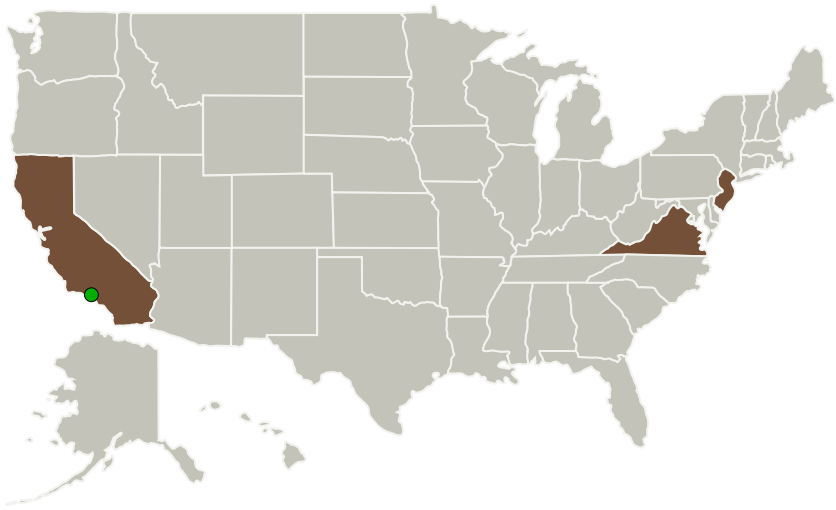

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Table of Contents

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Organizations Performing Work	Role	Type	Location
Princeton Lightwave, Inc.	Lead Organization	Industry	Cranbury, New Jersey
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California
University of Virginia-Main Campus	Supporting Organization	Academia	Charlottesville, Virginia

Primary U.S. Work Locations	
California	New Jersey
Virginia	

Project Transitions

February 2011: Project Start

February 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138988)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Princeton Lightwave, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

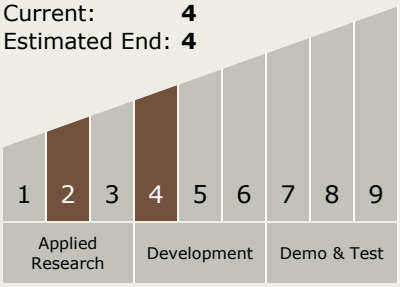
Carlos Torrez

Principal Investigator:

Bora Onat

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System